WHAT IS CLAIMED IS:

1.   A system for allocating bandwidth in a wireless communications network, comprising:

   a geo-location tool residing on a computer-
5   readable medium, the geo-location tool operable to receive data for a wireless communications network including a plurality of geo-location areas and to estimate bandwidth parameters for a geo-location area based on the data; and

10   an allocation engine residing on the computer-readable medium, the allocation engine operable to allocate bandwidth in the geo-location area based on its bandwidth parameters.

15   2.   The system of Claim 1, further comprising:

   the geo-location tool further operable to determine an allocation bandwidth for the geo-location area; and

   the allocation engine further operable to
20   allocate bandwidth in the geo-location area based on the allocation bandwidth.

   3.   The system of Claim 1, wherein the bandwidth parameters comprise at least one of a bandwidth usage and
25   a bandwidth demand for the geo-location area.

   4.   The system of Claim 1, wherein the bandwidth parameters comprise bandwidth interference contribution for the geo-location area.

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5.   The system of Claim 1, further comprising:

the geo-location tool operable to estimate bandwidth parameters for the geo-location area on a per service class basis; and

5   the allocation engine operable to allocate bandwidth in the geo-location on the per service class basis based on the bandwidth parameters.

6.   The system of Claim 1, wherein the data
10   received by the geo-location tool comprises historic and service level data for the wireless communications network.

7.   The system of Claim 1, the geo-location tool
15   further operable to generate, based on the data, a source map comprising sources of bit usage in the geo-location area and to estimate bandwidth parameters for the geo-location area based on the source map.

20   8.   The system of Claim 7, wherein the sources of bit usage comprise a high bandwidth use facility for which a contractual service level is provided by the wireless communications network.

25   9.   The system of Claim 7, wherein the sources of bit usage comprise an establishment for which local wireless access is provided by the wireless communications network at a contractual service level.

30   10.   The system of Claim 1, wherein the data comprises contractual service level data.

11. The system of Claim 1, wherein the data comprises at least one of data measured from usage within the wireless communications network, radio frequency measurement, and interference estimates.

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12. The system of Claim 1, the geo-location tool further operable to generate, based on the data, a subscriber usage profile indicating the probability of a subscriber engaging in a connection at the geo-location area and to estimate bandwidth parameters based on the subscriber usage profile.

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13. The system of Claim 12, wherein the subscriber usage profile comprises mobility information for the subscriber.

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14. The system of Claim 12, wherein the subscriber usage profile comprises service class invocation information for the subscriber.

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15. The system of Claim 12, wherein the subscriber usage profile comprises call hold information for the subscriber.

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16. The system of Claim 1, the geo-location tool further operable to generate, based on the data, a current usage map indicating real-time bandwidth being utilized at the geo-location area.

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17. The system of Claim 16, wherein the current usage map comprises a peak rate for each active connection within the geo-location area.

18. The system of Claim 17, wherein the current usage map comprises activity and service class information for each active connection within the geo-location area.

19. The system of Claim 18, wherein the current usage map comprises primary and neighboring servers for each active connection within the geo-location area.

20. The system of Claim 1, the geo-location tool further operable to generate, based on the data, a current demand map for the geo-location area based on the data.

21. The system of Claim 20, wherein the current demand map comprises a peak rate for each active connection within the geo-location area.

22. The system of Claim 21, wherein the current demand map comprises activity and service class information for each active connection within the geo-location area.

23. The system of Claim 22, wherein the current demand map comprises primary and neighboring servers for each active connection within the geo-location area.

24. The system of Claim 1, the geo-location tool further operable to generate, based on the data, an expected demand map for the geo-location area based on the data.

25.   The system of Claim 24, wherein the expected demand map comprises a peak rate for each potential connection within the geo-location area.

26.   The system of Claim 25, wherein the expected demand map comprises activity and service class information for each potential connection within the geo-location area.

27.   The system of Claim 26, wherein the expected demand map comprises primary and neighboring server information for each potential connection within the geo-location area.

28.   The system of Claim 1, the geo-location tool further operable to generate an interference contribution map indicating the impact on resource usage of supporting various bandwidths at the geo-location area based on the data.

29.   The system of Claim 28, the interference contribution map comprising an interference contribution value and a probability for each of a plurality of service classes associated with bandwidths at one or more sectors within the geo-location area.

30.   The system of Claim 28, wherein the interference contribution map indicates expected resource usage for each of a plurality of service classes at the geo-location area.

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31. The system of Claim 2, the allocation engine further operable to generate a bandwidth supply map indicating the available bandwidth at the geo-location area based on the allocation bandwidth, a total bandwidth, and an interference contribution bandwidth for the geo-location area.

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32.   A method for allocating bandwidth in a wireless communications network, comprising:

receiving data for a mobile network including a plurality of geo-location areas;

5   estimating bandwidth parameters for a geo-location area based on the data; and

allocating bandwidth in the geo-location area based on the bandwidth parameters.

10   33.   The method of Claim 32, further comprising:

determining allocation bandwidth for the geo-location area based on the data; and

allocating bandwidth in the geo-location area based on the allocation bandwidth.

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34.   The method of Claim 32, wherein the bandwidth parameters comprise at least one of a bandwidth usage and a bandwidth demand for the geo-location area.

20   35.   The method of Claim 32, wherein the bandwidth parameters comprise bandwidth interference contribution for the geo-location area.

36.   The method of Claim 32, further comprising:

25   estimating bandwidth parameters for the geo-location area on a per service class basis; and

allocating bandwidth in the geo-location area on the per service class basis based on the bandwidth parameters.

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37. The method of Claim 32, wherein the data comprises historic and service level data for the wireless communication network.

5   38. The method of Claim 32, further comprising:

generating, based on the data, a source map comprising sources of bit usage in the geo-location area; and

estimating bandwidth parameters for the geo-
10   location area based on the source map.

39. The method of Claim 38, wherein the sources of bit usage comprise a high bandwidth use facility for which a contractual service level is provided by the
15   wireless communications network.

40. The method of Claim 38, wherein the sources of bit usage comprise an establishment for which local wireless access is provided by the wireless communication
20   network at a contractual service level.

41. The method of Claim 32, wherein the data comprises contractual service level data.

25   42. The method of Claim 32, wherein the data comprises at least one of data measured from usage within the wireless communications network, radio frequency measurements, and interference estimates.

43. The method of Claim 32, further comprising:

Generating, based on the data, a subscriber usage profile providing the probability of a subscriber engaging in a connection at the geo-location area; and

5   estimating bandwidth parameters based on the subscriber usage profile.

44. The method of Claim 43, wherein the subscriber usage profile comprises mobility information for this

10   subscriber.

45. The method of Claim 43, wherein the subscriber usage profile comprises service class invocation information for this subscriber.

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46. The method of Claim 43, wherein the subscriber usage profile comprises call hold information for this subscriber.

20   47. The method of Claim 32, further comprising generating a current usage map indicating rural-time bandwidth being utilized at the geo-location area.

48. The method of Claim 47, wherein the current

25   usage map comprises a peak rate for each active connection within the geo-location area.

49. The method of Claim 48, wherein the current usage map comprises activity and service class

30   information for each active connection within the geo-location area.

50. The method of Claim 49, wherein the current usage map comprises primary and neighboring servers for each active connection within the geo-location area.

5   51. The method of Claim 32, further comprising generating a current demand map for the geo-location area based on the data.

52. The method of Claim 51, wherein the current
10   demand map comprises a peak rate for each active connection within the geo-location area.

53. The method of Claim 52, wherein the current demand map comprises activity and service class
15   information for each active connection within the geo-location area.

54. The method of Claim 53, wherein the current demand map comprises primary and neighboring servers for
20   each active connection within the geo-location area.

55. The method of Claim 32, further comprising generating an expected demand map for the geo-location area based on the data.

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56. The method of Claim 55, wherein the expected demand map comprises a peak rate for each potential connection within the geo-location area.

57. The method of Claim 56, wherein the expected demand map comprises activity and service class information for each potential connection within the geo-location area.

58. The method of Claim 57, wherein the expected demand map comprises primary and neighboring servers for each potential connection within the geo-location area.

59. The method of Claim 32, further comprising generating an interference contribution map indicating the impact on resource usage of supporting various bandwidths at the geo-location area based on the data.

60. The method of Claim 59, wherein the interference contribution map comprises an interference contribution value and a probability for each of a plurality of service classes associated with disparate bandwidths at one or more sectors within the geo-location area.

61. The method of Claim 59, wherein the interference contribution map indicates expected resource usage for each of a plurality of service classes at the geo-location area.

62. The method of Claim 33, further comprising generating a bandwidth supply map indicating the available bandwidth at the geo-location area based on the allocation bandwidth, a total bandwidth, and an interference contribution bandwidth for the geo-location area.

63. A method for estimating bandwidth requirements for a service type in a wireless communications network, comprising:

5   determining bandwidth demand for the service type in an area;

determining interference contribution caused by the bandwidth demand; and

adding the interference contribution to the 10   bandwidth demand to estimate allocation bandwidth requirements for the area.

64. The method of Claim 63, further comprising:
determining bandwidth demand for each of a 15   plurality of service types in the area;

determining an interference contribution caused by the bandwidth demand for each service type; and

adding the interference contribution to the bandwidth for each service type to estimate bandwidth 20   requirements for the service types for the area.

65. The method of Claim 63, further comprising determining interference contribution caused by the bandwidth demand based on a time of day.

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66. A system for estimating bandwidth requirements in a wireless communications network, comprising:

a computer-readable medium; and

software stored on the computer-readable

5   medium, the software operable to determine a bandwidth demand in an area of the wireless communications network, to determine an interference contribution caused by the bandwidth, and to add the interference contribution to the bandwidth demand to estimate the bandwidth

10   requirement for the area.

67. The system of Claim 66, wherein the software is further operable to estimate a bandwidth requirement in the area for each of a plurality of service types.

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68. A method for estimating a bandwidth requirement for a mobile device in a wireless communications network, comprising:

    determining a bandwidth demand for a mobile
5 device based on a requested service type;

    determining an interference contribution caused by the bandwidth demand based on the location of the mobile device in the wireless communications network; and

    adding the interference contribution to the
10 bandwidth demand to generate an estimated bandwidth requirement for the mobile device.

69. The method of Claim 68, further comprising determining interference contribution for the bandwidth
15 demand based on a time of day.

70. A system for estimating a bandwidth requirement for a mobile device in a wireless communications network, comprising:

a computer-readable medium; and

5   software stored on the computer-readable medium, the software operable to determine a bandwidth demand for a mobile device based on a requested service type, determine an interference contribution caused by the bandwidth demand based on the location of the mobile

10   device in the wireless communications network, and to add the interference contribution to the bandwidth demand to generate an estimated bandwidth requirement for the mobile device.

15   71. The system of Claim 70, the software further operable to determine the interference contribution based on a time of day.

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72. A system for allocating bandwidth in a wireless communications network, comprising:

a computer-readable medium; and

software stored on the computer-readable

5   medium, the software operable to receive data for a wireless communications network including a plurality of geo-location areas, to generate a source map comprising sources of bit usage in a geo-location area, a subscriber usage profile indicating the probability of a subscriber

10 engaging in a connection at the geo-location area, a current usage map indicating real-time bandwidth being utilized at the geo-location area, a current demand map for the geo-location area, an expected demand map for the geo-location area, and an interference contribution map

15 indicating the impact of resource usage of supporting various bandwidths at the geo-location area based on the data, and to allocate bandwidth in the geo-location area based on the maps and profile.

73. A quality of service (QoS) filter for a wireless connection, comprising:
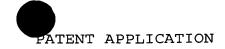
a computer-readable medium; and

software stored on the computer-readable
5   medium, the software operable to receive the location of
a mobile device communicating over a wireless connection,
to determine quality of service parameters for the
connection based on the location of the mobile device,
and to determine out-of-level traffic for the connection
10 based on the quality of service parameters.

74. The QoS filter of Claim 72, the software
further operable to determine quality of service
parameters for the connection based on a time of day of
15 the connection.

75. The QoS filter of Claim 72, wherein the
location of the mobile device comprises a building for
which quality of service parameters are provided at a
20 contractual level.

76. A method for filtering traffic for a wireless communication connection, comprising:

receiving a location of a mobile device communicating over a wireless connection;

5   determining quality of service parameters for the connection based on the location of the mobile device; and

determining out-of-level traffic for the connection based on the quality of service parameters.

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77. The method of Claim 75, further comprising determining quality of service parameters for the connection based on a time of day.

78. A system for allocating bandwidth in a wireless communications network, comprising:

a plurality of first stage queues including a per connection queue and a quality of service filter for

5   each of a plurality of connections in an area of the wireless communications network, the connections each associated with one of a plurality of service classes;

a plurality of second stage queues including a per location queue for each of the service classes; and

10   an allocation engine operable to determine an allocation bandwidth for each service class based on the bandwidth demand in the first stage queues for the service class and interference contribution caused by the bandwidth demand, to allocate the allocation bandwidth to

15   an extent available in the second stage queues and to transfer traffic from the first stage queues, to the second stage queues.

79. The system of Claim 77, wherein the quality of

20   service filter determines out-of-level traffic for a connection based on location of a mobile device for the connection.

80. The system of Claim 77, wherein the quality of

25   service filter determines out-of-level traffic for a connection based on a time of day.
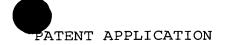
81. An intelligent internet protocol (IP) wireless gateway, comprising:

a bandwidth supply map indicating available bandwidth at each of a plurality of geo-location areas in

5   a wireless network; and

an allocation engine operable to generate and use the bandwidth supply map to allocate bandwidth to IP connections on a geo-location area basis in the wireless network and operable to account for bandwidth

10   interference between IP connections in the bandwidth supply map.

82. The intelligent IP wireless gateway of Claim 80, the allocation engine further operable to provide

15   location specific bandwidth supply estimates for bandwidth brokering.

83. The method for brokering bandwidth in a wireless communications network, comprising:

determining bandwidth usage including interference contribution for each of a plurality of areas in a wireless communications network;

generating and maintaining a real-time bandwidth availability map for each of the areas based on the bandwidth usage; and

accepting an additional connection from an area in response to at least determining that sufficient bandwidth exists at the location to support the connection.